Developing Sustainable Skills for Designers in Additive Manufacturing

Workshop Professionals of the Future II

European Multiplier Event

EWF, Lisbon, 21 October 2025

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Agenda

- Project factsheet
- Priorities and objectives
- From gaps to opportunities
- Project pathway
- Key outputs/results
- Pilots across Europe

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Project Factsheet

KA220 Cooperation Partnerships Higher Education

December ‘23 to November ’25 (24M)

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Priorities and Objectives

The **SINGforGREEN project** developed **specific competence units** aligned with company needs in **design for green transition** within **Additive Manufacturing (AM)** technologies

The project **addressed real-world skills gaps** across several sectors essential to the digital and green transition

A set of **Open Educational Resources (OERs)** was created to ensure easy and free access to training

Finally, the project **tested the AM Design green/sustainability curriculum**, validating its relevance and applicability in real training contexts

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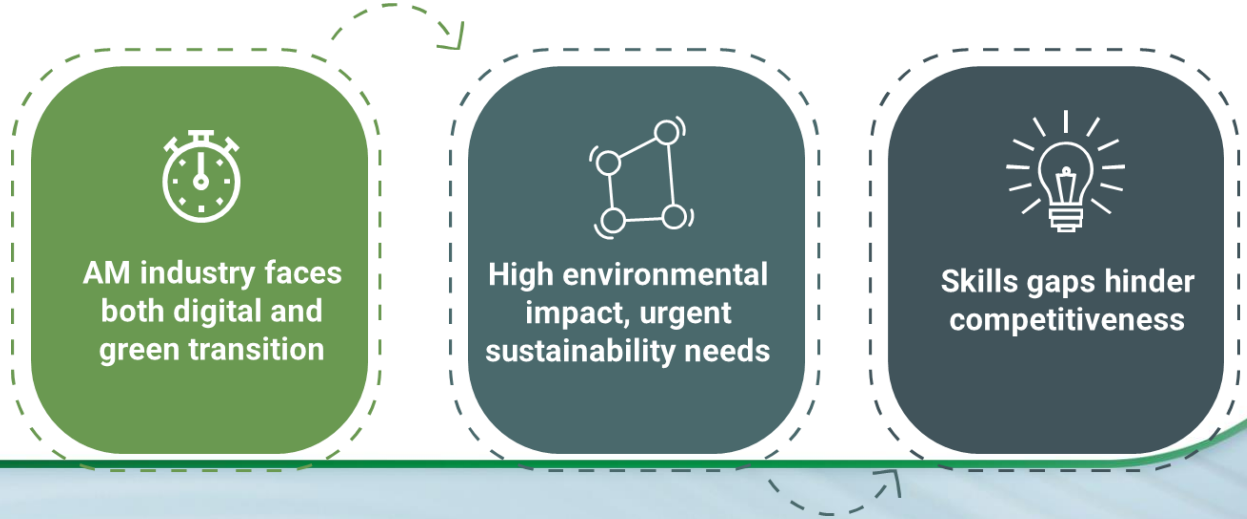
From Gaps to Opportunities

- **Additive Manufacturing (AM)** plays a key role in sustainable production
- It helps **reduce waste and energy consumption**
- There is a **growing skills gap** in AM design, particularly regarding sustainability
- **SINGforGREEN** addresses this by developing **training resources and curricula** focused on **eco-friendly AM design**



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Project Pathway: From Research to Impact

Identified needs → Conducted interviews, desk research, and focus groups to map AM skills gaps

Defined Competence Units → Established key knowledge, skills, and learning outcomes for sustainable AM design

Developed **OER**s → Created digital training resources and instructional videos

Trained Trainers → Held capacity-building workshops to ensure effective delivery of the new curriculum

Piloted Courses → Implemented national training pilots across partner countries to validate and refine content

Enhanced Dissemination → Ensured project visibility through the official website, events, and conferences to boost visibility and adoption

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Key outputs/results - Ready to Explore!

Discover the project's main findings and publications — now available for download on the SINGforGREEN website.

Work Package 2:

Industry-Driven Analysis for AM Design and Green Skills

SING for GREEN
Methodology

OPEN RESULT

SING for GREEN
SDG

OPEN RESULT

SING for GREEN
Industry Driven Analysis

OPEN RESULT

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Two Learning Paths for Green AM Design

SING GREEN

💡 **Modular & Flexible**
Short, stackable training blocks

🎯 **Focused Learning**
Each CU defines knowledge, skills, and learning outcomes (LOs).

🌱 **Sustainability in Practice**
Two CUs (21 hours) developed to promote eco-efficient AM design

2 New Competence Units at EQF 7 / EWF Expertise level

Additive Manufacturing Lifecycle Assessment & Sustainability

- 🌿 Environmental impact
- 🔁 Life cycle thinking
- ♻️ Sustainable process choices

Sustainability-Driven Design Strategies

- 🔧 Material optimisation
- 🌱 Eco-design principles
- 💡 Functional performance with reduced environmental cost

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Pilots Across Europe

SING GREEN

🗓️ **June – September 2025**
Pilots conducted with **over 150 participants** across **five countries**:
PT **Portugal** (FAN3D) GB **UK** (Brunel University) ES **Spain** (IDONIAL) SK **Slovakia** (Lattice S.R.O.)
HR **Croatia** (Metal Centre Čakovec)

Highlights from the pilots
→ Learners and trainers pointed out the **relevance** of the content to real industrial challenges
→ Training materials proved **usable and easy to integrate** into existing courses
→ Activities were **highly applicable**, strengthening the link between AM and sustainability in practice

Next steps
Feedback is now guiding the **refinement of the Competence Units** and supporting the **transferability** of green AM training across Europe

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Thank you!

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